Docket No.: 0019240.00171US3

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| Applicant: | Anargyros Papageorgiou et al. | Confirmation No.: | 3844 |
| Application No.: | 10/582,298 | Art Unit: | 2193 |
| Filed: | September 18, 2007 | Examiner: | Kevin G. Hughes |
| Title: | FAST QUANTUM MECHANICAL INITIAL STATE APPROXIMATION | | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**DECLARATION OF DR. ANARGYROS PAPAGEORGIOU UNDER 37 C.F.R. §1.132**

Sir:

I, Anargyros Papageorgiou, hereby declare and state:

1. I am a co-inventor of the subject matter presently claimed in the above-identified application.

2. I graduated from the University of Athens, Greece with a bachelor's degree in Mathematics and received a PhD degree in Computer Science in 1990 from Columbia University.

3. I have extensive experience in computer science, particularly in the area of algorithms and computational complexity. I have written over 25 scientific publications in leading scientific journals and books, I have given numerous talks on algorithms and computational complexity and I have received the 2008 Information-Based Complexity Prize for my work in the field. I am an inventor or co-inventor on one patent or patent applications in the field of quantum computing.

4. The text provided below is an excerpt from "Quantum Computation and Quantum Information," Cambridge University Press, 2000 reprinted 2001, by M. A. Nielsen and I. L. Chuang.

**One possible solution to the problem posed by the eventual failure of Moore's law is to move to a different computing paradigm. One such paradigm is provided by the theory of quantum computation, which is based on the idea of using quantum mechanics to perform computations, instead of classical physics. It turns out that while an ordinary computer can be used to simulate a quantum computer, it appears to be impossible to perform the simulation in an *efficient* fashion. Thus quantum computers offer an essential speed advantage over classical computers. This speed advantage is so significant that many researchers believe that *no* conceivable amount of progress in classical computation would be able to overcome the gap between the power of a classical computer and the power of a quantum computer.**

("Quantum Computation and Quantum Information," Cambridge University Press, 2000 reprinted 2001, by M. A. Nielsen and I. L. Chuang, pp. 4-5)

5. According to the excerpt, quantum computing is a computation paradigm based on the idea of using quantum mechanics to perform computations. This is in contrast to ordinary or conventional or traditional computers, which perform computations based on classical physics.

6. Classical computing is a term used in computer science to distinguish computations that are performed by classical or conventional computers, in contrast to computations performed by quantum computers. The term classical algorithm is used to describe an algorithm for a computation that is to be carried out on classical or conventional computer, as opposed to the term quantum algorithm that describes a computation to be carried out on a quantum computer.

7. I am aware that claim 14 is rejected as indefinite for including the term "classically". As described above, the term "classically" is a term that is generally understood in computer science to describe computation performed using a classical or conventional computer.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 12/19/2011 By: _____

Dr. Anargyros Papageorgiou